

Claims

- [c1] 60. An abrasive sheet product comprising a sheet-form base having an array of fastener elements integrally molded with the base on a first side thereof, and abrasive particles extending from a substrate laminated to a second side thereof, the product formed by a process comprising providing an apparatus including
- a cylindrical mold roll rotatable about an axis and defining fastener element-shaped mold cavities at a peripheral surface thereof,
- a cylindrical pressure roll having a resilient, conformable surface arranged to engage said mold roll at a nip and to form a mold gap at said nip for forming said base web, the pressure roll constructed to apply operating pressure to force the resin into said cavities, and
- an extruder die to introduce molten resin to said nip, passing a substrate having extending abrasive particles through the nip with the molten resin such that the resilient surface of the pressure roll conforms in the vicinity of the abrasive particles to protect the abrasive particles as they pass through the nip, thereby forming fastener elements integral with a base web on a broad side of the substrate.

- [c2] 61. A method of forming a fastener product that includes a plurality of fastener elements integral with a base layer, the method comprising:
providing a rotatable mold roll having an outer surface and a plurality of inwardly extending cavities shaped to form at least stem portions of the fastener elements;
depositing molten resin on the outer surface of the cavity roll with an applicator; and
by rotation of the mold roll, carrying the molten resin on the mold roll a distance from a point at which the resin is deposited, into a pressure region in which pressure fills the inwardly extending cavities with some of the resin, other of the resin forming the base layer on the outer surface of the cavity roll.
- [c3] 62. The method of claim 61, wherein the mold roll is cooled, the mold roll removing heat from the deposited resin as the resin is carried into the pressure region.
- [c4] 63. The method of claim 61, wherein the applicator generates sufficient pressure to partially fill the cavities.
- [c5] 64. The method of claim 61, wherein the resin is under substantially atmospheric pressure conditions as it is carried from the applicator toward the pressure region on the mold roll.

- [c6] 65. The method of claim 61, wherein the cavities are shaped to form elements that are loop-engageable.
- [c7] 66. The method of claim 61, wherein the cavities are shaped to form hooks.
- [c8] 67. The method of claim 61, including introducing a web material to the pressure region, pressure in the pressure region bonding the web to the resin to form a fastener laminate.
- [c9] 68. The method of claim 61, wherein the pressure applying means is capable of applying load to the mold roll in the range of about 1000 to 1600 pounds per lineal inch along said mold roll.
- [c10] 69. The method of claim 61, wherein the mold roll comprises an axially arranged stack of a large multiplicity of disks, at least many of which have mold cavities at their peripheral surfaces.
- [c11] 70. The method of claim 61, wherein the cavities extend into the mold roll to a depth of between about 0.004 and 0.035 inch.